

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): **B. Gibson et al.**

Application No: **10/766,430**

Filing Date: **January 28, 2004**

Attorney Docket No: **H0003690**

Title: **EXTRUDABLE PVC COMPOSITIONS**

Art Group: **1713**

Examiner: **W.K. Cheung**

Mail Stop: Appeal Brief - Patents  
Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

*Attn: Board of Patent Appeals and Interferences*

**REPLY BRIEF**

Sir:

Appellant files this Reply Brief under 37 C.F.R. 41.41 in response to the  
Examiner's Answer which was mailed on June 18, 2008.

## TRAVERSAL OF ANTICIPATION REJECTIONS

The Examiner has rejected the pending claims (i.e., claims 1 – 18, 67, and 71 – 85) as being anticipated by US 3,635,856 (Kaneko). At issue is whether one skilled in the art would immediately consider Kaneko's disclosure of "sucrose alkyl esters" to encompass a composition comprising a majority of octa-alkyl sucrose esters. Sucrose alkyl ester is an exceptionally broad category of compounds that, by one sub-categorization method, encompasses eight subgenera (based upon the number of available substitution sites on sucrose), each of which contains hundreds of different species of compounds. Compounds of the different subgenera have vastly different physical properties, particularly with respect to their use as manufacturing processing aids. Therefore, Appellants assert that one skilled in the art would not immediately consider that the "sucrose alkyl esters" of Kaneko includes octa-alkyl sucrose esters, particularly in view of Kaneko's express teachings of mono- and di-alkyl esters of sucrose.

### A. The Claimed Invention

The claims at issue are directed to a process for extruding a resin-containing composition comprising a saccharide ester component, wherein at least 40 weight percent of the saccharide ester component is an octa-carbonyl substituted saccharide ester. Applicants have discovered that such compositions are effective lubricants, particularly for PVC extrusion processes, and exhibit a highly desirable, yet difficult to obtain combination of properties. For example, extrudable PVC compositions having such a lubricant exhibit low viscosity (which is desirable for extrusion operations) while the

extruded product exhibits high tensile strength and dimensional stability. The claimed compositions also exhibit certain unexpected characteristics, such as an unexpectedly high heat stability performance.

## **B. Anticipation Analysis**

Generally, a patent claim is anticipated only if each and every limitation of the claim is found in a single item of prior art. *Seymour v. Osborne*, 78 US 516, 555 (1870). Applicants acknowledge that anticipation does not require that each element of the claim be disclosed expressly in a single item of prior art. Rather, what is required is that “each and every element as set forth in the claim is found, either *expressly or inherently* described, in a single prior art reference.” (emphasis added) *Verdegaal Bros., Inc. v. Union Oil Co.*, 814 F.2d 628, 631(Fed.Cir.1987). A finding of inherency, however, can only be based on extrinsic evidence which “must make clear that the missing descriptive matter is *necessarily* present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill.” (emphasis added) *In re Robertson*, 169 F.3d 743, 745 (Fed. Cir. 1999).

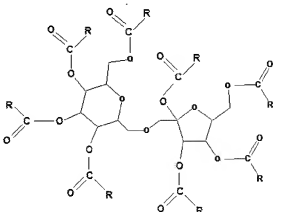
Moreover, it is well established that the disclosure of a genus, even a genus having a relatively small number of species, does not necessarily inherently disclose all species within the genus. *Corning Glass Works v. Sumitomo Elec. U.S.A., Inc.*, 868 F.2d 1251, 1262 (Fed.Cir.1989) ( “Under [defendant's] theory, a claim to a genus would inherently disclose all species. We find [this] argument wholly meritless....”). In order to properly find that a genus inherently anticipates a species, a proper legal analysis requires an examination of a number of factors, including the number of species embraced by the

genus, the closeness of their relation, and whether all the species can be “at once envisaged” by a person of ordinary skill in the art without having to speculate, combine disclosures not related to each other, or choose indiscriminately from possible combinations. *In re Ruschig*, 52 C.C.P.A. 1238, 343 F.2d 965, 974 (C.C.P.A.1965); *Metabolite Labs., Inc. v. Lab. Corp. of Am. Holdings*, 370 F.3d 1354, 1367 (Fed. Cir. 2004) (stating that “[a] prior art reference that discloses a genus still does not inherently disclose all species within that broad category,” and finding of no anticipation where the prior art reference disclosed “no more than a broad genus of potential applications of its discoveries” and that the genus simply invited investigation to discover other uses).

Since a person is entitled to a patent unless the invention is anticipated by a prior art reference under U.S.C. § 102(b), the examiner bears the burden of presenting at least a *prima facie* case of anticipation. *In re Sun*, 31 U.S.P.Q.2d 1451 (Fed. Cir. 1993). The Examiner must met this burden before the burden of going forward shift to the applicant. *Id.* (See also, *Continental Can Co. USA v. Monsanto Co.*, 948 F.2d 1264, 1268 (Fed. Cir. 1991), stating that whether a claim limitation is inherent in a prior art reference is a factual issue on which evidence may be introduced.) If the applicant submits rebuttal evidence, the ultimate burden to establish anticipation remains with the Patent and Trademark Office; thus the ultimate question becomes whether, based on the totality of the record, the examiner carried his burden of proof by a preponderance of the evidence. *Id.*

### 1. Examiner's Rejection Based Upon Substantial Equivalence

In rejecting the claims as being anticipated by prior art, the Examiner argues that “the saccharide ester of Kaneko et al. has a structure that is substantially identical to the saccharide ester of Formula I as claimed.” Examiner's Answer, pp. 3 and 5 (citing Kaneko col. 1, lines 42 – 47; col. 3, lines 9 – 30; col. 4, lines 45 – 60; col. 5, lines 25 – 45, and Examples I and II of col. 5- 6). For convenience, the relevant portions of Kaneko and Formula I of the pending claims are reproduced below:

<i>Kaneko disclosure of sucrose alkyl esters</i>	<i>octa-substituted carbonyl esters of a saccharide according to Formula I of claims 1 and 67</i>
<ul style="list-style-type: none"> <li>• “... sucrose alkyl ester ...”; col. 3, line 9.</li> <li>• “... sucrose alkyl ester may ... include mono-esters and di-esters of fatty acids having an alkyl group with 12 – 18 carbon atoms ...”; col. 4, lines 46 – 50.</li> <li>• “As the sucrose alkyl ester, there are exemplified sucrose lauryl ester, sucrose myristyl ester, sucrose stearyl ester and the like.”; col. 4, lines 50 – 53.</li> </ul>	

The Examiner's assertion that “sucrose alkyl ester” is substantially identical to the octa-substituted saccharide carbonyl esters is untenable. A simple comparison of the different teaching in the two columns above shows that octa-alkyl sucrose esters are not the same as the compounds described in Kaneko and, thus, cannot be “substantially identical” as the Examiner suggests. Moreover, mono- and di- alkyl esters of sucrose

have very different physical properties compared to the claimed octa-alkyl sucrose esters. Thus, the Kaneko reference, on its face, does not describe any compound that is substantially identical to octa-alkyl esters of sucrose.

The Examiner has failed to provide any proof or competent evidence to support his assertion that “sucrose alkyl ester” and “octa-alkyl esters of sucrose” are substantially identical, other than referencing the Mitsubishi-Kagaku web site<sup>1</sup> for the proposition that sucrose has a total of eight hydroxyl groups, each of which can be individually substituted to form a mono- to octa-fatty acid ester. The Mitsubishi-Kagaku web site shows that sucrose inherently has eight substitutable hydroxyl groups. Applicants acknowledge this basic fact regarding the chemical structure of sucrose. However, a generic description of “sucrose alkyl ester”, even when combined with the fact that sucrose can have up to eight ester substitutes, is not equivalent to a teaching of octa-alkyl sucrose esters *per se*. Since the Examiner has not provided any factual evidence regarding why a generic description of “sucrose alkyl ester” *inevitably includes* octa-alkyl esters of sucrose, he has not met his burden of establishing a *prima facie* case of anticipation.

## 2. Examiner’s Rejection Based Upon A Genus Encompassing A Species

Notwithstanding the fact that Kaneko does not expressly teach octa-alkyl sucrose esters, the Examiner persists in arguing that the mere teaching of the “sucrose alkyl ester”

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<sup>1</sup> [www.mfc.co.jp/English/index.htm](http://www.mfc.co.jp/English/index.htm). The Mitsubishi-Kagaku web site is not prior art to the present application. This fact has not been disputed by the Examiner. The Mitsubishi-Kagaku web site shows that an inherent characteristic of sucrose is that it has eight substitutable hydroxyl groups. A more expansive reading of the Mitsubishi-Kagaku web site is improper and irrelevant to the present matter since it is not prior art.

genus is tantamount to teaching each of “8 species of sucrose alkyl esters”<sup>2</sup> as well. (Examiner’s Answer, p. 7, citing Kaneko, col. 3, lines 9 – 30.) While Appellants agree that octa-alkyl ester sucrose is a subgenus of the sucrose alkyl ester genus, Appellants disagree with the Examiner’s proposition that Kaneko specifically teaches each of the eight species of sucrose alkyl esters. A generic disclosure of “sucrose alkyl ester” and a statement that sucrose has up to eight substitutable groups, is not a disclosure of a sucrose octa-alkyl ester. No part of Kaneko, including the passage reproduced in the Examiner’s Answer, discloses eight individual species of sucrose alkyl esters. At best, Kaneko discloses only two species: mono-esters and di-esters (Kaneko, col. 4, lines 48 – 49), which on a comparative scale of amount of sucrose substitutions, lie at opposite ends of the substituted sucrose spectrum. The Examiner’s bald assertions that the genus in Kaneko reads on the claimed invention is unsubstantiated and, therefore, the Examiner has not met the Patent and Trademark Office’s burden of demonstrating that the claims are not patentable over Kaneko.

Notwithstanding the Examiner’s failure to establish a *prima facie* case of anticipation, Appellant have presented evidence<sup>3</sup> to the Examiner which shows that particular species of compounds within the different subgenera have very different physical properties, and thus are not closely related. Such differences are particularly pronounced between mono- and di-alkyl esters of sucrose disclosed in Kaneko compared to octa-alkyl esters of sucrose of the present claims. By way of example, but not

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<sup>2</sup> By “8 species of sucrose alkyl ester”, the Examiner is referring to sucrose alkyl esters having from one to eight alkyl substituents (i.e., mono- through octa-substituted alkyl esters of sucrose). More properly, these eight groups of substituted sucrose alkyl esters constitute eight subgenera, each of which constitute hundreds of different species of compounds.

<sup>3</sup> In maintaining his rejections of the present claims, the Examiner relies on Appellant’s Declarations by Fred Durrenberger filed January 10, 2007, which are referenced by the Examiner in the Examiner’s Answer.

necessarily by way of limitation, compositions in accordance with the present invention produce superior stability time compared to less substituted sucrose. The Examiner mistakenly argues that this evidence is irrelevant because it allegedly is premised upon Appellant's presumption that Kaneko only discloses a mixture of sucrose alkyl esters. Appellant's data, in fact, is not reliant upon any such premise, but instead demonstrates that the claimed species of the octa-esterified subgenus are not closely related to species in other subgenera, particularly the mono- and di-substituted subgenera disclosed in Kaneko. Such data effectively rebuts the Examiner's unsubstantiated conclusion that the sucrose alkyl ester genus anticipates the claimed invention.

**3. Examiner's Allegation That Kaneko Teaches Pure Octa-esterified Sucrose**

In a further attempt to fit the claimed invention into the Kaneko reference, the Examiner, while acknowledging that Kaneko does not teach a mixture of sucrose alkyl esters, argues that it teaches a composition comprising pure octa-alkyl esters of sucrose. (See Examiner's Answer, p. 7, where the Examiner clarifies his prior statement that mixtures of sucrose alkyl esters are not disclosed by Kaneko by stating, "the examiner is intended [sic] to indicate that each of the eight species as taught within Kaneko et al. can be used individually, not as a mixture of partially esterified sucrose esters.") The only support proffered by the Examiner for this conclusion is that he "has a reasonable basis to interpret the recited 'sucrose alkyl esters' to mean a 'sucrose alkyl ester' that has been fully esterified (100 wt. % octa-substituted)." (Office Action dated April 4, 2007, p. 5 – 6.) There is no justification for such a conclusion, either in Kaneko or in any other evidence cited by the Examiner. Moreover, the Examiner's argument supporting this



conclusion is further without merit because it is based on circular reasoning – i.e., the Examiner’s basis for supporting his argument is that he has a “reasonable basis” for making it, although this “reasonable basis” is never defined. Accordingly, Appellants assert that the composition of the claimed invention is not anticipated by Kaneko.

### C. CONCLUSION

For at least the reasons set forth above, applicants respectfully request this Board to overrule the Examiner’s rejection and to allow the pending claims.

Respectfully submitted,

Dated: August 18, 2008

/Joseph F. Posillico/  
Joseph F. Posillico  
Registration No. 32,290

Synnestvedt & Lechner  
2600 Aramark Tower  
1101 Market Street  
Philadelphia, PA 19107  
Telephone: (215) 923-4466